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## DESCRIPTION

### OPTICAL INFORMATION PROCESSING DEVICE AND RECORDING MEDIUM

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#### TECHNICAL FIELD

This app is a 371 of PCT/JP03/10422 8/18/03  
The present invention relates to optical information processing devices and recording media used in the fields of optical recording and optical communications.

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#### BACKGROUND ART

Conventional optical information processing devices carry out recording and reproduction using optical recording media such as CD-R, CD-RW, and DVD-RAM. With these recording media, recording is carried out using light of a single wavelength and therefore recording is carried out using, for example, changes in the recording medium's refractive index due to phase changes or the like. As for recording techniques, there are single-layer and double-layer recording techniques, and recording capacity is limited by the surface area of the recording medium.

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In carrying out reproduction from a recording medium, a laser light is focused on the recording medium from an external portion and miniscule indentations formed on the transparent recording medium, or changes in the reflectivity of refractive index change portions, are read, and thus the recorded information is read out.

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On the other hand, in recording on the recording medium, writing is carried out by focusing light to the recording medium and causing a change such as phase change, sublimation, or perforation due to the heat at the light-focused area. The above is a recording-reproduction method based on a laser light source of one photon/one wavelength.

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Furthermore, the use of recording media in a volumetric direction (volumetric recording) in order to improve the capacity of recording media is being investigated. For example, proposals and experimental manufacture have been carried out such as a technique in which information is volumetrically recorded within the surface and depth (thickness) direction of a bulk-state recording medium and an optical disk of a construction having multilayer recording layers. However,

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